LASSA FEVER

DISEASE REPORTING

In Washington

Endemic to equatorial Africa, Lassa fever has never occurred in Washington State. One or more cases may indicate an act of terrorism and constitute a public health emergency.

Purpose of reporting and surveillance

- To identify rare diseases associated with travel.
- To identify potentially exposed laboratory personnel and to provide counseling.
- To raise the index of suspicion of a possible bioterrorism event if no natural exposure source is identified.

Reporting requirements

- Health care providers: **immediately notifiable to Local Health Jurisdiction**
- Hospitals: **immediately notifiable to Local Health Jurisdiction**
- Laboratories: **immediately notifiable to Local Health Jurisdiction**, specimen submission required
- Local health jurisdictions: **suspected or confirmed cases are immediately notifiable to DOH Communicable Disease Epidemiology: 1-877-539-4344**

CASE DEFINITION FOR SURVEILLANCE

Clinical criteria for diagnosis

A severe illness with temperature ≥101^{o}F (38.3^{o}C) of <3 weeks duration, no predisposing factors for hemorrhage, no established alternative diagnosis with at least two of the following:

- Petechial or hemorrhagic rash
- Epistaxis
- Hematemesis
- Hemoptysis
- Hematochezia
- Bleeding from other sites.

Laboratory criteria for diagnosis (to be completed by Level D laboratories only)

- Identification of Lassa virus from a clinical specimen.

Case definition

- Probable: A case that meets the clinical case definition, is not laboratory confirmed, and is not epidemiologically linked to a confirmed case, but has appropriate exposure history.
- Confirmed: A case that is laboratory confirmed, or a case that meets the clinical case definition and is not laboratory confirmed, but is epidemiologically linked to a confirmed case.

A. DESCRIPTION

1. Identification

An acute viral illness of 1-4 weeks duration. Onset is gradual, with malaise, fever, headache, sore throat, cough, nausea, vomiting, diarrhea, myalgia and chest and abdominal pain; fever is persistent or spikes intermittently. Inflammation and exudation of the pharynx and conjunctivae are commonly observed. About 80% of human infections are mild or asymptomatic; the remaining cases have a severe multisystem disease. In severe cases, hypotension or shock, pleural effusion, hemorrhage, seizures, encephalopathy and edema of the face and neck are frequent. Albuminuria and hemoconcentration are common. Early lymphopenia may be followed by late neutrophilia. Platelet counts are only moderately depressed, but platelet function is abnormal. Disease is more severe in pregnancy, and fetal loss occurs in more than 80% of cases. Transient alopecia and ataxia may occur in convalescence, and 8th cranial nerve deafness occurs in 25% of patients; only half recover some function after 1-3 months. Though only about 1% of infected persons die, the case-fatality rate is about 15% among hospitalized cases; higher rates may be observed in epidemics. Women in the third trimester of pregnancy and fetuses fare poorly. AST levels more than 150 and high viremia indicate poor prognosis. Inapparent infections, diagnosed serologically, are common in endemic areas.

Diagnosis is made by IgM antibody capture and antigen detection by ELISA or by PCR; by isolation of virus from blood, urine or throat washings; and immunoglobulin G (IgG) seroconversion by ELISA or IFA. Laboratory specimens may be biohazardous and must be handled with extreme care that includes BSL-4 containment, if available. Heating serum at 60°C (140°F) for 1 hour will largely inactivate the virus, and the serum can then be used to measure heat stable substances such as electrolytes, BUN or creatinine.

2. Infectious Agent

Lassa virus, an arenavirus, serologically related to lymphocytic choriomeningitis, Machupo, Junin, Guanarito and Sabia viruses.

3. Worldwide Occurrence

Endemic in Sierra Leone, Liberia, Guinea and regions of Nigeria. Cases have also been reported from the Central African Republic. Serologic evidence of human infection has also been recognized in the Congo, Mali and Senegal. Serologically related viruses of lesser virulence for laboratory hosts from Mozambique and Zimbabwe have not yet been associated with human infection or disease.

4. Reservoir

Wild rodents; in west Africa, the multimammate mouse of the Mastomys species complex.

5. Mode of Transmission

Primarily through aerosol or direct contact with excreta of infected rodents deposited on surfaces such as floors and beds or in food and water. Laboratory infections occur, especially in the hospital environment, direct contact with blood through inoculation with contaminated needles and pharyngeal secretions or urine of a patient. Infection can also be spread from person to person by sexual contact.

6. Incubation period

Commonly 6-21 days.

7. Period of communicability

Person to person spread may occur during the acute febrile phase when virus is present in the throat. Virus may be excreted in urine of patients for 3-9 weeks from onset of illness.

8. Susceptibility and resistance

All ages are susceptible; the duration of immunity following infection is unknown.

B. METHODS OF CONTROL

1. Preventive measures:

Specific rodent control.

2. Control of patient, contacts and the immediate environment:

a. Report to local health authority.
b. Isolation: Institute immediate strict barrier isolation in a private hospital room away from traffic patterns. Entry of nonessential staff and visitors should be restricted.

Because of the low incidence of nosocomial infections reported from African hospitals, transfer to special isolation units is not considered necessary; however, nosocomial transmission has occurred, and strict procedures for isolation of body fluids and excreta should be maintained. A negative pressure room and respiratory protection is desirable. Male patients should refrain from unprotected sexual activity until the semen has been shown to be free of virus or for 3 months. To reduce exposure to infectious materials, laboratory tests should be kept to the minimum necessary for proper diagnosis and patient care. Technicians should be alerted to the nature of the specimens and supervised to ensure that appropriate specimen inactivation/isolation procedures are followed. Dead bodies should not be embalmed but rather sealed in leak proof material and cremated or buried promptly in a sealed casket.

c. Concurrent disinfection: Patient's excreta, sputum, blood and all objects with which the patient has had contact, including laboratory equipment used to carry out tests on blood, should be disinfected with 0.5% sodium hypochlorite solution or 0.5% phenol with detergent, and, as far as possible, appropriate heating methods, such as autoclaving, incineration or boiling. Laboratory tests should be carried out in special high containment facilities; if there is no such facility, tests should be kept to a minimum and specimens handled by experienced technicians using all available precautions such as gloves and biological safety cabinets. When appropriate, serum may be heat inactivated at 60°C (140°F) for 1 hour. Thorough terminal disinfection with 0.5% sodium hypochlorite solution or a phenolic compound is adequate; formaldehyde fumigation can be considered.
d. Quarantine: Only surveillance is recommended for close contacts (see B2f, below).
e. Immunization of contacts: None.
f. Investigation of contacts and source of infection: Identify all close contacts (people living with, caring for, testing laboratory specimens from or having noncasual contact with the patient) in the 3 weeks after the onset of illness. Establish close surveillance of contacts as follows: body temperature checks at least 2 times daily for at least 3 weeks after last exposure. In case of temperature greater than 38.3ºC (101ºF), hospitalize immediately in strict isolation facilities. Determine patient's place of residence during 3 weeks prior to onset, and search for unreported or undiagnosed cases.
g. Specific treatment: Ribavirin (Virazole), most effective within the first 6 days of illness, should be given IV, 30 mg/kg initially, followed by 15 mg/kg every 6 hours for 4 days and 8 mg/kg every 8 hours for 6 additional days. See also: Borio L, Inglesby TV, Peters, CJ, et al. Hemorrhagic fever viruses as biological weapons: medical and public health management. JAMA 2002; 287:2391-2405 (in *Additional Resources*).

3. Epidemic measures

Not determined.

4. International measures

Notification of source country and to receiving countries of possible exposures by infected travelers.